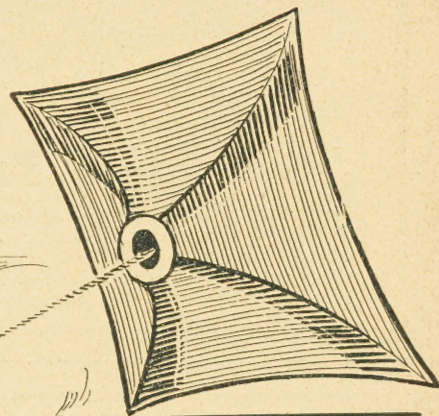


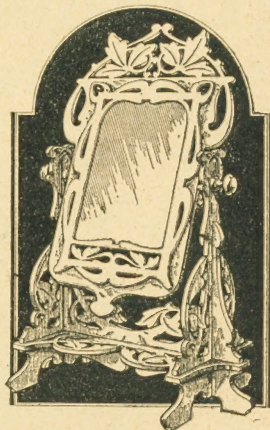
Hobbies

WEEKLY

*Making and
Flying a*
KITE



THIS DESIGN FREE



May 29th. 1937

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Vol. 84. No. 2171

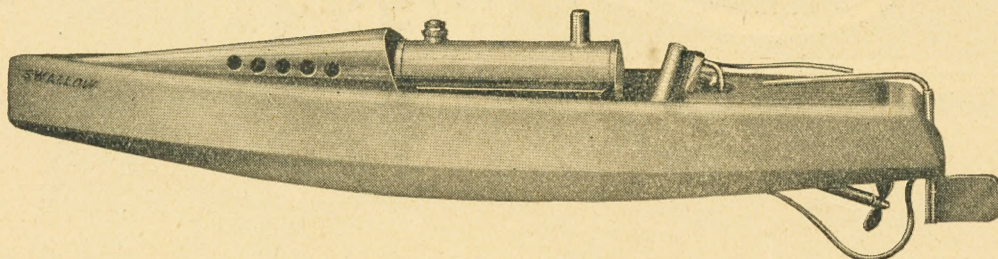
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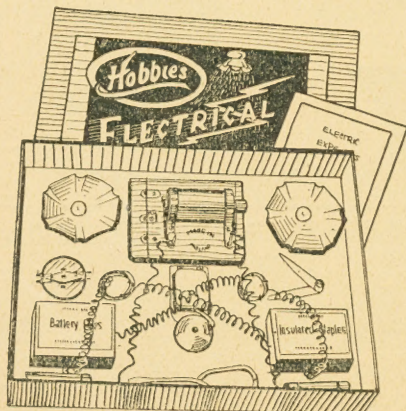
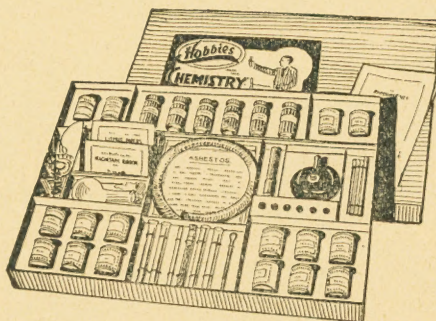
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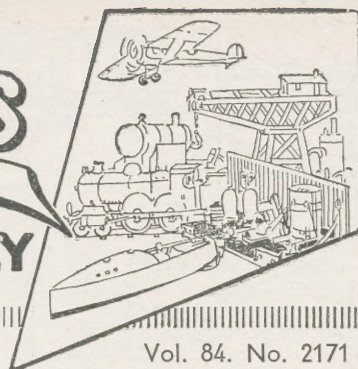
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Hobbies

WEEKLY



May 29th. 1937

Vol. 84. No. 2171

ALTHOUGH the Coronation is over I expect most of you will be keeping those excellent Souvenir Medals on the special Display Stand which I had in our issue of May 1st. I know there was a large number made up and now you have a chance to win a prize with them. Details are given on page 206 and I want everyone who has made a Stand to send it in. In addition to the Silver Medal offered as the principal prize I shall give as many consolation prizes as merit it according to age or excellence. And if you are a new reader who has not yet made a Stand—well you can get a back copy and still be in time to get your entry in by June 12th.

NEXT week I am devoting a number of pages of special interest to Scouts because I know there are large numbers among my readers who are interested in the movement. But all you other people outside will find it equally interesting, because you, too, enjoy hiking or camping or photography and so on. In addition, too, there will be details for making a jolly fine little Dinghy, for puddling about on the river or lake at home.

IAM going to introduce a new feature which requires your friendly assistance. So many readers have methods of work which they have evolved for themselves, have thought out some handy little gadget or produced some labour saving device. Or some have made a business of fretwork on a special line of toys or models, whilst others can suggest how they have disposed of theirs. In fact, there are, I know, heaps of friendly and helpful hints on fretwork which you can give me to pass on to other readers. Send them along, will you? And I shall run a page of Fretwork Paragraphs and Notes which I know will be very helpful and valuable to everyone. I will give 5/- for the best of the page, and 2/6 for the next best, with consolation awards for

every one used. So think out your best hint, or send me your piece of fretwork news, and let me use it. I want it to be a readers' own paper for the help of other readers. Just mention Fretwork Notes Page when you write, please.

YOU must look out for the film of "The Fighting Navy" when it comes along. Not because of its merit but because I want you to notice the battleship "The Royal Oak" which, as a rebel ship is sent to the bottom. It is a marvellously realistic picture, but the point to realize is that the actual ship you see go down is a model built to 1/20th scale. It is true to scale, built in 1/4 in. fir and 3-ply. The little guns can be properly trained, and the firing is done by electric control. The model, however, is finally lost, because as she heels over and her "boilers" flood, she explodes with marvellous realism. Actually, of course, she has no "innards" beyond the special explosive cartridge. But it just shows how a model can be made!

"THE man who is always turning corners never sees the opportunity which is coming straight down the street." That's only one of many "wisecracks" I had thrown at me by a Canadian correspondent (Mr. G. W. Potter of Toronto) in a letter recently. You'd like them all I know, but I have not the room for them, or the many little jokes which readers send in. Thank you all the same, for the trouble taken in sending them.

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Next Week's Design—Hat and Coat Rack

Correspondence should be addressed to: The Editor, Hobbies Weekly, Dereham, Norfolk, and a stamp enclosed with the Reply Coupon from Cover iii if a reply is required. Particulars of Subscription rates, Publishing, Advertising, etc. are on cover iii.

STRANGE thing, but shortly after my note the other week of a reader aged 86, I had a pathetic note from one aged 78 complaining that he couldn't do as much as he would like. Mr. G. Ellis of Chatham has been almost a lifelong worker, and we all hope he will be able to continue making his odds and ends for some time yet. Remember Mr. Gribble at 86!

The Editor

Send your own simple tips to The Editor, Hobbies Weekly, Dereham, Norfolk. Keep them short and add rough pencil sketches if possible.

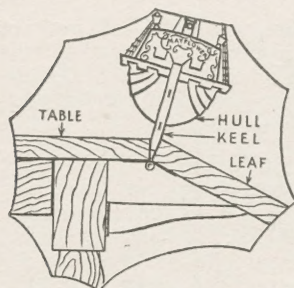
HINTS AND TIPS



For original Tips published the sender will receive a Hobbies Self-filling Fountain Pen. We cannot acknowledge or print all tips sent

Galleon Builders

MODEL Galleon builders who have no vice to hold the boat with when painting, can put the keel in the leaf of a table as



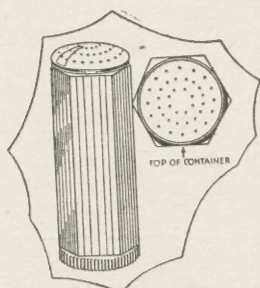
illustrated. A hinged support must be arranged beneath, as can be seen to hold the shelf tight at the correct height.—(L. H. Webb).

Table Tennis

TABLE Tennis players (meaning amateurs) often find the ball is trodden on and dented or cracked. To remedy this hold the ball by the fire with the affected part facing it. The disfigurement will soon disappear and the ball will be found good to last for many more games.—(J. Bailey).

Picnic Condiments

READERS may be interested in a simple tip of how to make two containers, one for salt and one for pepper which are very useful for picnics. All you need get is two shaving stick containers



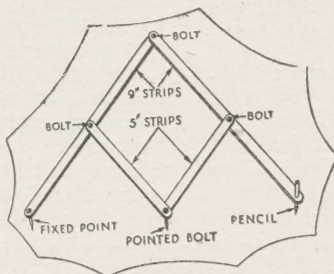
and drill a lot of little holes in the top. This can be done with a fretwork drill, and then you put the condiments in to form a picnic cruet.—(R. Johnston).

Sticking Tiles

IF there are any loose or broken tiles in the fireplace at home, obtain a little flour and salt. Mix some cold water with these until they form a paste, and spread the paste on the back of the tiles with an old knife. You will find this will stick the tiles securely.—(J. Clement).

An Enlarger

A SIMPLE way of enlarging designs or decorations is by the pantograph and it is fairly simple to make one. Get two pieces of wood about 9ins. long, and two about 5ins. Fasten the two 9 inch strips together at the top with a nut and bolt. Half way down these, fasten the two 5 inch strips in the same way. Now bolt the two ends of these together with a long bolt, sharpening the end of the bolt to a point.



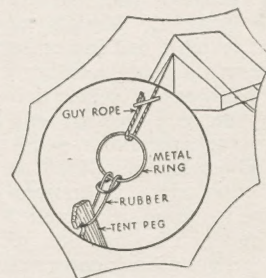
On the end of one of the 9 inch strips make a hole for a pencil to slip through and hold tightly. Now the pantograph is complete, but before using it make sure that all the joints are loose. To use it, place the pointed bolt round the design and an enlargement will be produced by the pencil. Of course this can be made with cardboard or meccano.—(F. Weller).

Scratched Furniture

TO remove scratch marks from furniture, brush with a mixture of equal parts of olive oil and vinegar. Leave for an hour or two before polishing.—(K. McMahon).

A Camping Tip

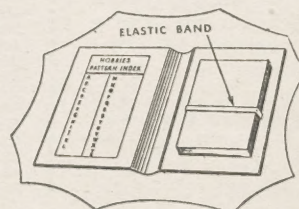
HERE is a way in which you can avoid any danger of damaging your tent, either by not slackening your guys off enough during rain or by perhaps accidentally kicking



a guy rope which might result either in a broken guy or a ripped tent. First of all cut four rings $\frac{1}{2}$ in. wide from an old motor inner tube and attach to each of these a small brass curtain ring. Then attach same to the guy as shown and you have only to slip the rubber over your peg (as previously the rope) and you have an excellent safety device.—(W. McFall).

Keeping Design Sheets

HERE is a tip for keeping your spare design sheets neat and tidy. For doing this take the stiff back off an old used book and cover with brown paper or fancy leatherette. On one side fasten an elastic band so that the patterns may be held firmly as can be seen in the picture. In order to know



the contents easily you can add an index on the facing page as illustrated, whilst a suitable title can be pasted to the front of the cover.—(B. Malcolm).



FRETWORK

This week's
free gift
Design

THE old novelty style of photo frame is shown here, and it can be made from the full size patterns of this week's gift sheet with the parcel of wood supplied by Hobbies Ltd., as set out herewith. The frame is large enough to take a postcard or anything up to 6ins. by 4ins. and the picture is in a frame which swings on two uprights in a very pleasing and attractive manner.

The Stand is completely cut in fretwork, and if completed in sycamore as suggested, the strong, almost white material, will form a very fine subject.

Before we begin, however, let us realise that in addition to the cutting there is a certain amount of fitting to be done, which must be undertaken carefully. Both the halving joint and the mortise and tenon joint are introduced so the work will be a good test of our ability. We are not suggesting, of course, that it is too much for anyone, but simply that care and attention must be paid.

The whole Stand which supports the frame is rigidly fitted together by means of these joints, and if correctly cut and glued, the work will prove very satisfactory. If, on the other hand, the joints are cut loosely and the proper attention not given to them, then the frame will wobble and the joints look unsightly.

The patterns are pasted down in the usual way for cutting, and we must assume that the reader knows how to cut out the various parts and how to clean them up with glasspaper afterwards to take away the paper remains. Before commencing at all, however, it is as well to understand how the parts are put together, and the constructional drawings herewith should be a considerable help in this direction.

The Stand Portion

Let us look first at the framework which holds the actual swinging portion. This framework is composed of a base supported by two feet and one running right across its length.

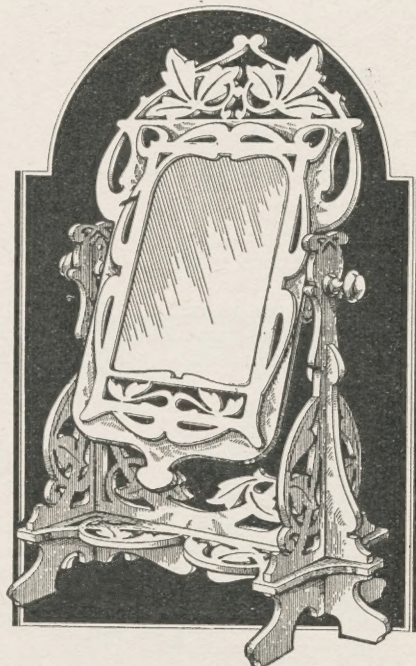
These under-feet and stretcher piece are, in turn, fitted together, and this is where the joints commence. The two end feet which run from

back to front must first of all be halved into the long stretcher piece which runs across. Fit one of these cross pieces at C and the other one at D, making sure that the whole of the edge is flush with the long straight portion of the cross strut.

This cross strut in turn has the projecting tenon F which fits into the underside of the base at the corresponding mortises. All this is seen in the constructional drawing at Fig. 1.

The base still has various open mortises in it at E, G and H. These are to hold the upright pieces which can now be fitted, and are shown in construction at Fig. 2. The side uprights are the pieces with the projecting tenons at G and A,

A NOVEL SWING FRAME



but before they are finally fixed they must be slipped by means of the halving joint into the crossbar at A and B. Thus you have a three-piece framework which is then glued into the base at E and H.

It will be seen from the foregoing general details, how important it is to get every joint correct because all are linked up with each other in one way or another, that even the alteration of one will throw the whole thing out of true.

For instance, if you cut the tenon in the base at F slightly out of line with the one at E, you will throw out the underside of the work. Then, too, if the ones at H are not true, they will make it impossible for the halving joint at A or B to fit without undue strain.

MATERIALS SUPPLIED

Fretwood—
For making the Photo Frame we supply a parcel of sycamore with two No. 16 turned knobs, 2/3 post free 2/9.
Fittings—
A pair of brass swivels No. 6133, Glass No. 5804 3d.
Fittings 8d. post free 1/-.
A complete parcel wood, swivels and glass will be sent—
3/6 post paid.

All the joints, of course, can be tested separately with each of the corresponding pieces of wood, then a light pencil mark made on them to ensure they are returned to the same place. The long halving joints at A and B must be cut correctly so that the parts slide together comfortably without having to be unduly forced.

Take the thickness of the wood and measure it carefully to see it will fit into the halving joint actually before it is cut. Then having cut them gradually press the parts together. If there is any tightness, take them apart again and ease the part by thinning it down with glasspaper. If, on the other hand, the opening itself has been cut with the ragged edge, this must be filed down very carefully to leave a straight line which will slide into the other piece. Do not attempt to force the parts home or you will split the wood.

All edges, too, which stand on the base either above or below, must be perfectly level. If one



Fig. 1—The three-piece base construction

is a little higher than the other, it will prevent the tenons going right home. Test all these little points out before fitting, and when you have got a satisfactory job, they can all be glued finally in place. Apply the glue to the mortise as well as to the edges of all parts which join on to each other.

If you have made a satisfactory job, the work should be completed so that you cannot tell how the parts are fitted, and anyone who takes it up to examine will be at a loss to find any joins.

Now we come to the frame holding the picture, and have a straightforward piece of work which anyone can undertake. A special glass is supplied and the opening for this should be cut after the rest of the fretwork has been done in the back itself. In order, too, to allow this piece that comes out to be used as backing, a drill hole should be made on the cutting line rather than in the waste wood.

Overlay and Backing

The overlay is the only part of the whole job which is cut in $\frac{1}{8}$ in. material—the rest is $\frac{3}{16}$ in.—and it holds the glass in from the front. The bottom of this overlay, however, covers a portion of the glass itself, so before it is glued in, a little piece of backing material should be glued behind so the glass cannot be seen through it.

Any fancy stuff like tinsel paper, fancy paper or leatherette paper can be used. It must be very

thin to allow the rest of the overlay to be glued on firmly.

When the glass and picture have been fitted, the backing board can be put in after the edges have been chamfered down to take off some of their thickness. This back is then held either by photo clips or by a piece of strong brown paper pasted over all of it. Photo clips should be screwed carefully to the $\frac{3}{16}$ in. wood and bent up slightly so they can lie flat on the back itself.

Assembly

We thus have the two component parts and all that remains now is to fit them together. This is done by using special brass swivels illustrated at Fig. 3. These are two parts joined together by a special bearing which is joined with one portion to the upright and one portion to the swinging frame itself. The swivels may be tight when you receive them, but a drop of oil will release them then they will turn quite easily.

For the fitting, we have to arrange a flat plate on the back of the photo frame itself, and the position of this is shown by the dotted lines and the letter K. A rear view of the frame showing the swivel supports is given at Fig. 3.

This support is glued very firmly at rightangles to the back, and if you have not marked its position previously, you can gauge it by the fact that it comes opposite the indentation in the overlay on the front.

See this strut is glued on firmly and add with screws one of the sides of the swivel before fitting it. The other portion of the swivel automatically falls in line with the blank space on the side uprights or swing supports. A hole at J is shown

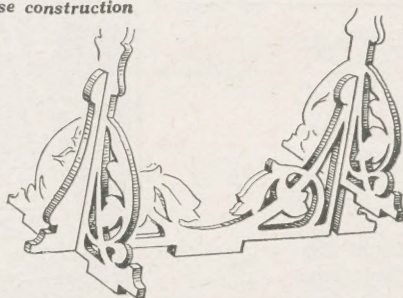


Fig. 2—The upright framework

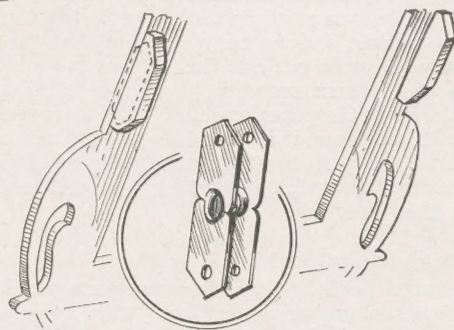


Fig. 3—The swivel parts and holders

in the pattern of this portion, but this is for the knob which has to be added later. The swing support is fitted by putting it in place and turning the frame to allow you to drive the screws in safely.

You must, of course, add some support behind the side pieces to prevent breakage when driving the screws. Be sure, too, to get these swivels opposite each other or you will not get the frame to swing.

Finally, the two knobs are fitted to the sides purely as ornamentation. They do not affect the swivel movement. If the shank of the knob is too long, it can easily be cut off, but should be glued into the hole previously made for it.

MAKING AND FLYING A KITE

THE sport of kite flying is probably one of the oldest of hobbies, but in these days with model aeroplanes and other modern inventions, the old-fashioned kite is rather neglected.

The construction of a kite, however, is quite simple, and in this case the writer has taken the drawings and photos from a tested model. Incidentally the cost of this kite is approximately 2/-, this includes the flying cord.

It is first necessary to make a light wood frame. Split laths (plasterers') are used for this, the size for them being 42ins. by 1in. by 3/16in., and it is a good plan to test them by bending, to make sure that they are supple.

The laths are secured together in the form of a cross at a 2in. centre, with four small nails. In order to strengthen the joint it may be bound with fine cord, this arrangement may be seen in Figs. 1 and 2. Each lath end, four in all, is cut to the shape as shown in Fig. 3. This cut is made to take a cord which goes round the four ends as shown in Fig. 1.

When tying this cord, care has to be taken that the lath frame is not pulled out of shape. A touch of glue on the ends will prevent the cord coming out of place. After allowing time for the glue to set, this frame is laid on a sheet of brown paper 36ins. by 36ins., in the position shown in Fig. 4.

It is essential that a margin of 3ins. is left round the frame on the four outside edges of the cord. This 3in. margin should be coated with thin glue or strong paste, folded over the cord, and secured in the positions as shown in Fig. 4. The numbers 1, 2, 3 and 4 on the margin is the order in which it is folded over and fixed in position. At the corners of margins 3 and 4 the paper will be of double thickness.

Decoration

For decoration various designs may be cut out of lightweight paper and pasted on the front, or face of the kite. The front or face is the side on which

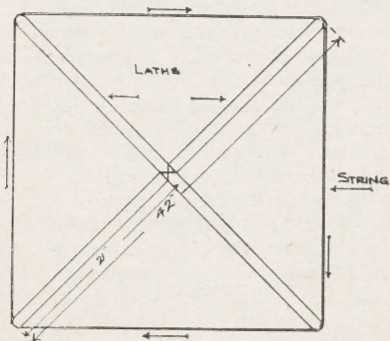


Fig. 1—The general framework

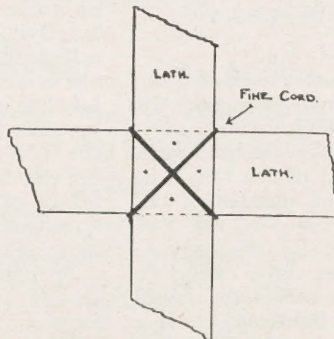


Fig. 2—Method of joining laths at centre

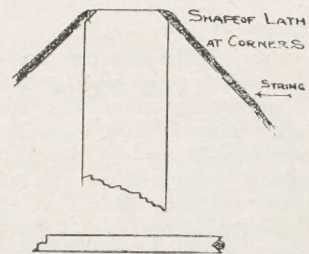
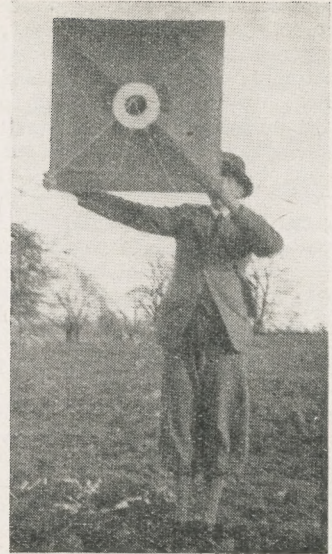


Fig. 3—Side section showing V cut for string

Holding the Kite ready for the take-off



no lath is seen. On this kite the writer cut out three discs to the sizes shown in Fig. 4, the colours being red, white, and blue. The effect of the decoration is perhaps better seen from the photo than the sketch.

The decoration, is of course, quite unnecessary, and has nothing to do with the flying properties of the kite. Nevertheless it improves the look of the kite when flying if there is a design on the front.

Belly-band and Tail Strings

Having completed the body, it is ready for the fitting of the belly-band and tail strings. The method of fitting these cords is as follows:—Two small holes are bored in the centre of the two laths at the top of the kite, each hole being 1in. from the lath end. At the bottom of the kite two holes are made in each lath, at 1in. and 1/2in. from the end, see Fig. 4.

When boring these holes it is well to use a brace and bit. Should the laths be split, it is useless to trouble fitting the belly-band and tail strings, as they will just pull through the lath when slightly strained.

For the belly-band and tail strings a fairly

strong cord should be used, the tail string being fitted first, the length for this is 38ins. The ends of this cord are inserted in the two end holes at the bottom of the kite, i.e., the holes made at $\frac{1}{2}$ in. Knots are made on each end to prevent the loop from pulling through. A small loop is made on the centre of this cord to which the tail is tied.

The belly-band cords are fitted in the same manner, in this case, however, the sizes are 55ins. for the bottom band and 43ins. for the top. These two bands are joined together equidistantly from either side of the kite, and a small loop left for the flying string. Looking at the kite from a side view the angle formed by the belly-band strings is as shown in Fig. 5.

One of the secrets in flying a kite successfully is

required, and it is well to have this wound on to a piece of smooth stick. The selection of a suitable flying ground is an important feature, as this should be free from trees, houses, telephone wires, and electric cables.

How to Fly

Given a favourable wind the first procedure in the flying operation is to run off about 60yds. of cord, the end of which should have been securely tied to the stick already referred to. This cord should lie on the ground down wind, i.e., in the direction in which the wind is blowing, the free end being tied to the loop on the belly-band. The tail should also be affixed, and trailed out behind the kite.

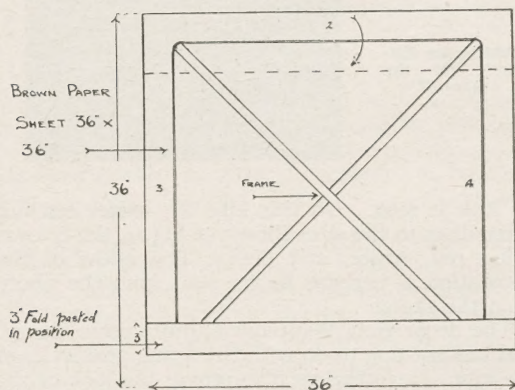


Fig. 4—A back and front view with details of construction

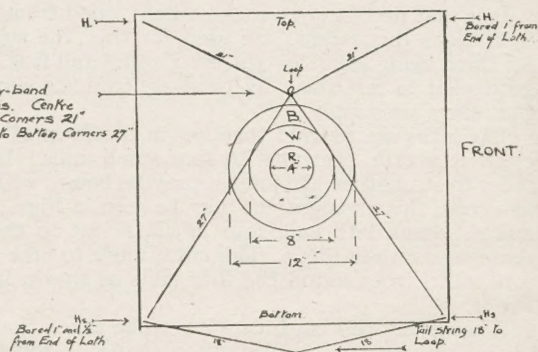


Fig. 5 Side view

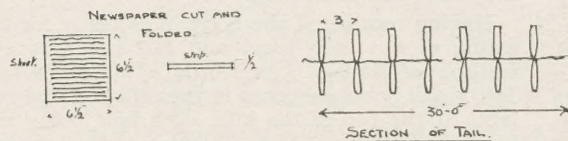


Fig. 6—Details of tail string, etc.

to have it correctly balanced by the tail. Many flying failures can be attributed to the lack of length in the tail, and to using a divot of turf tied on the end of the tail as a substitute.

Length of Tail

In order to ascertain the correct length of a tail for this type of kite, a rough guide is to take the measurement across the kite, which in this case is 2ft. 6ins. and multiply it by 12—answer 30ft. The weight and balancing power of the tail is, of course, governed by the size and number of tail pieces or slats fitted.

Newspaper will be found quite suitable for these slats, being cut and folded from single sheets to the sizes as shown in Fig. 6. The tail pieces should be fixed at intervals of 3ins. to a light cord, using a knot as shown on the enlarged drawing Fig. 6.

For the test flight, a ball of strong string will be

The assistant's duty now is to hold the kite up facing the wind (see photograph). The kite flyer should take a firm hold of the flying cord at the stick, making sure, of course, that it will uncoil freely.

When a suitable gust of wind strikes the kite, the assistant lets go, while the flyer himself runs with the flying cord into the wind. If the breeze is of sufficient strength, and the belly-band adjustments are correct, the kite will rise at once, as long as the kite keeps rising the flyer should let out cord. If, however, it shows a tendency to fall, he should hold the cord firm, and continue running into the wind. He can also encourage the kite upwards by pulling in cord. Should the kite while in flight take a sudden upward turn, then nose dive, this would indicate that the belly-band adjustment was wrong.

Probably the top strings being too short. These should be altered until the correct position is found. A jerky lateral motion during flight accompanied by rolling, signifies lack of length in the tail.



Model Railway Accessories



A GOOD supply of pocket-money is necessary to buy all the fittings one would like to possess, but it is possible to make practically all one's accessories with but the outlay of a few coppers in many instances and, if one is at all handy with tools, to make them so that they are miniature replicas of the real thing. In the following instructions you will find out how to equip the lay-out with many useful fittings and all at a cost of less than you would be required to pay for one well-made telegraph pole at the toy shop.

The main material used for the following accessories is obtainable from most ironmongers and is known by the name of "punch-bar." That is the metal strip used in the making of wire bird-cages, with equidistant holes neatly punched along its length.

When you are buying the "punch-bar" get a supply of bird-cage wire as well; you will get enough of both to turn out quite a respectable number of accessories for 6d. or so. Both the

fences and railings alongside the line and about the station buildings and Figs. 1 and 2 show how ordinary iron railings may be constructed of any length up to 3 feet; this being the length of the "punch-bar" strips.

The bar is cut to the required length, two pieces for each length of fencing, then a sufficient number of short pieces of wire are cut off, all exactly the same size, placed into their respective holes and

SIMPLE METAL WORK

secured with the least touch of solder. Take care to see the bars are perfectly parallel before soldering the wires into position.

Fig. 2 shows the same type of fence mounted upon a low brick wall, the wall being formed from a strip of wood covered with imitation brick or stone paper. Quite a good way to imitate stone

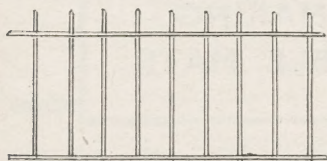


Fig. 1—Simple type of railings

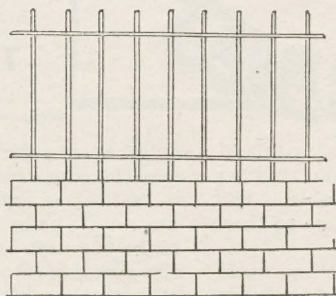


Fig. 2—Railings on a brick wall

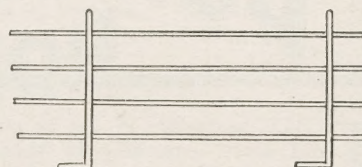


Fig. 3—Another type of fencing

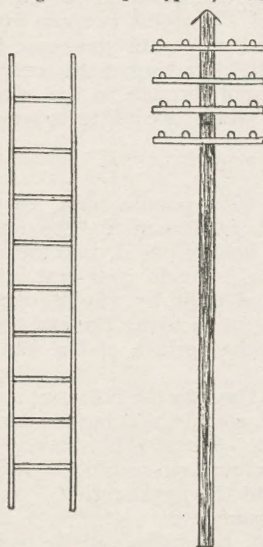


Fig. 4—An iron ladder
Fig. 5—A telegraph pole



Fig. 6—A simple suspension bridge

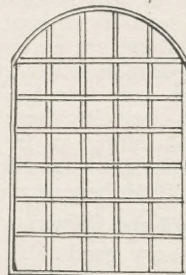


Fig. 7—A model window frame

wire and bar are well tinned and take solder readily so a neat assembly is a simple matter, in addition, they offer a good surface for paint which simplifies decoration.

No railway is complete with a system of

is to coat the wood with thin, hot glue and while it is tacky to sprinkle it thickly with finely crushed sand-stone, then when it has set hard to mark off the sections of stone with a ruler and a finely-pointed scriber.

Fig. 3 shows a stranded wire fence, such as might be seen surrounding a field or alongside the line. In this case pieces of "punch-bar" form the uprights, the horizontal members being formed from any thin, flexible wire strained fairly tightly

and secured in place, just as in a large fence of the same type. If the bottoms of the upright members are bent to a right angle the posts may be secured to lengths of wood by means of small screws.

At Fig. 4 is shown a small ladder made from "punch-bar" and short lengths of wire for the rungs. Signals fitted with these ladders look much more realistic and they will be found very useful for many other purposes.

Telegraph poles are expensive to buy and at the best, always appear to be out of proportion to the other components of the system.

If you make them up yourself you may make them any size you like to suit your own railway. Here is how it is done. The pole itself consists of a length of $\frac{1}{4}$ -in. dowel-rod, with a scrap of tin pinned on to the top for a weather-cap.

The cross bars are short pieces of "punch-bar" let into the post by means of shallow saw-cuts and fixed with a spot of glue. Very short pieces of wire are soldered into the holes of the cross-bars and if tiny white beads are slipped over each wire and a little glue run down into them to secure them to the wire, the telegraph poles will be fitted with extremely realistic insulators.

Bridges

A suggestion for making bridges is shown at Fig. 6, this being one side of a simple suspension

bridge. No description as to the making is necessary as the sketch explains itself. The footway is a strip of wood and almost any type of bridge, trellis, cantilever or simple hand-rail type, may be constructed from the same methods.

Window Frames

A window frame for the model buildings is shown at Fig. 7. It is made up from bar and wire and should be backed with clear celluloid. The projecting ends of the wires supply a simple way of fixing the frames into wooden walls, for if holes are drilled to receive them the frames may be sprung into place and the celluloid fitted in afterwards.

Windows of this kind are very useful for engine sheds, platform lights and similar uses, as they may be made with rounded tops very simply and add greatly to the appearance of the buildings in which they are fitted.

Short, odd lengths of the bar may be utilised by making them into model platform barrows, seats and similar small equipment, while the ease with which the material may be bent to shape makes it admirable for forming brackets for the support of light wooden fittings about the stations and buildings; the holes already made serving as screw holes.

POTTED HOBBIES

MAKING TABLE MATS

TABLE mats are in use in every household, and more especially in these days when polished top tables are fashionable. Hot plates, as you know do no end of damage to these nice tables without the use of mats.

There are several ways of making these mats. Cork mats which can be bought quite cheaply are not very ornate, but they can be made very attractive by decorating the surface with a pattern and filling it in afterwards with oil colours. Decorative transfers too, obtainable from any Hobbies branch may be used.

Card and Cretonne

Very good table mats may also be made from cardboard. To make these, cut out two pieces of cardboard to the size and shape you require, and paste them together. Use good paste, and be very careful to get the edges well done otherwise you will have trouble with hot plates, etc.

Now you have to cover them over with suitable pieces of material such as cretonne, casement cloth, or linen. To do this satisfactorily, you should paste about three quarters of an inch around the "wrong" side of the mat, and place your material also cut to shape, and that much bigger on it. Allow it to dry under pressure. So far only half your mat is made. Do exactly the same

thing again; then take the two "mats" and over-sew the edges carefully, and your mat is ready.

Instead of cretonne as a decoration for these mats, you may use wool. For this purpose you make the mat in the same way until you come to the question of covering it. Starting at the centre, weave your pattern in wool through to the edge, using different coloured wools according to your own ideas.

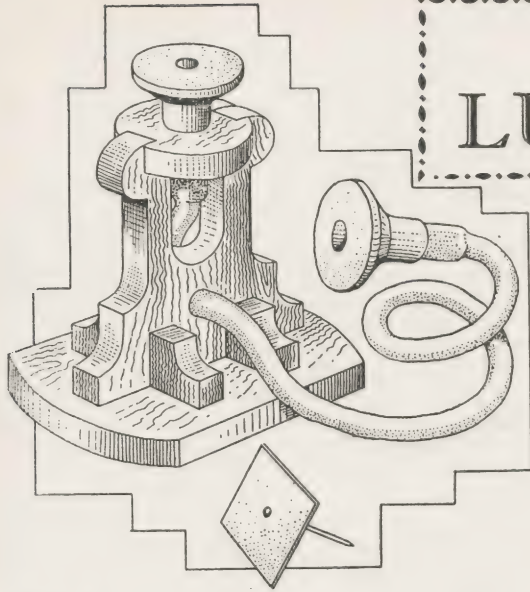
Raffia Mats

Raffia mats are also very popular and easy. For this, cut a disc of cardboard to the size required, and cut also a hole of one or two inches in diameter in the centre. Divide your mat into sections with a pencil, and begin by winding with one of the colours of the raffia fixing the end and placing it sideways on the surface of the cardboard.

Wrap it over and over through the hole, out and over the edge of the mat, round the other side and through the hole again. When this section is complete, take another colour, and repeat the same operation with this one in the next section. And so on until the mat is complete.

The finished strands of the raffia can be fixed on the edge by means of a blanket stitch running round it, and catching them up.

A JOKE LUNG TESTER



THIS queer, surgical-looking device never fails to arouse one's curiosity, and of course, when informed that it is nothing more than a lung tester—well, we are very anxious to show the owner there is nothing weak about our lungs, and tell him so.

"O.K.," he grins, picking up the small square of card through which a pin projects, "I bet you anything you like you can't blow this tiny piece of card from here"—it is placed point foremost on the top spool of the strange device—"inside two minutes."

"Sez you," we challenge, picking up the mouth-piece. "Well, just watch—I'll have it off in a second!"

Taking a deep, deep breath, we blow lustily until all the air is expelled from our powerful lungs, and then we wonder why the card remains impassive to our efforts and why our friend is almost bursting with silent mirth.

The Joke

Not to be outdone, we try again, puffing and blowing until we are red in the face—and still the card won't move! It merely revolves in an agitated manner and absolutely refuses to budge.

Yet, it should do so, because the air-line is quite free, and the pin is not stuck in the wood, but simply rests in the spool to keep the card in place. What is the reason—what's the mystery?

Our chortling friend, or rather, practical-joker knows, and explains that it is due to the consequent escape of air which has a suction power rather like a vacuum. Thus, the harder we blow, the stronger the suction, and the more impossible it is to remove the card. No wonder we couldn't shift it!

The Construction

The idea, you will see, is simplicity itself, but in order to make it more effective, we have designed a novel sort of apparatus that makes it look more

like a medical or surgical appliance. If you wish to "test" the vacuum power now, an ordinary spool and the pinned card would serve.

As you will doubtless want to make the structure suggested, we will proceed with the construction. The wood used could be $\frac{3}{8}$ in. stuff marked out to the $\frac{3}{8}$ in. squared outlines given in Figs. 1 and 2. On the other hand, if you have nothing available except $\frac{1}{2}$ in. wood, then you can draw up $\frac{1}{2}$ in. squares and follow the outlines accordingly, or if it should happen to be $\frac{5}{16}$ in. thick, use $\frac{5}{16}$ in. squares and so on.

Before cutting the hole in the upright, it is advisable to obtain the rubber tubing and find its diameter. Any local druggist or chemist or rubber appliance store should be able to supply you with this tubing which should be 12 ins. long by $\frac{3}{8}$ in. in diameter.

The Tubing

If you have a chemistry outfit, the tubing supplied with it (for use with the Bunsen burner) might serve as, if of the right diameter, you will not destroy it in any way.

Having cut out the upright, base and two support pieces (see Fig. 2), glue the latter to the base mortises, then insert the upright. The circular cap, which is also cut from $\frac{3}{8}$ in. wood, is fitted and glued to the top as in the illustration. The arrows given in the outlines indicate, of course, how the compasses can be utilized.

(Continued on page 204)

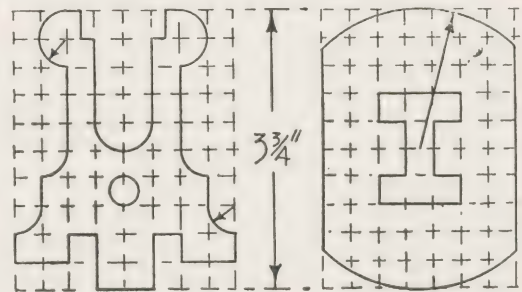


Fig. 1—Outline of upright and base in $\frac{3}{8}$ in. squares

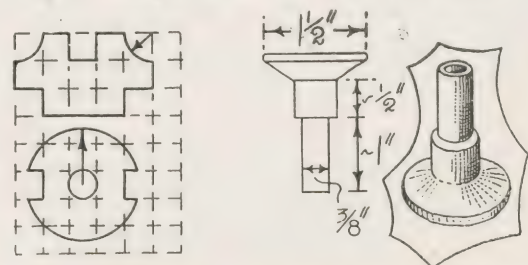


Fig. 2—Support pieces

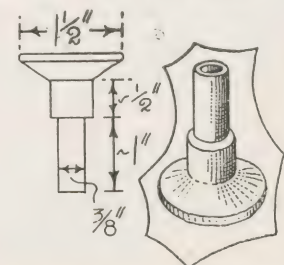
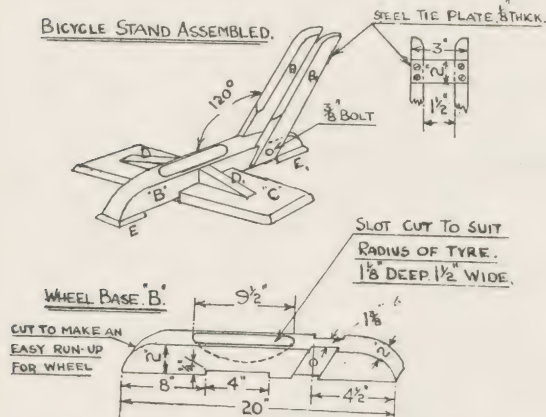


Fig. 3—Details of the spool

A SIMPLE BICYCLE STAND

THOSE who are every-day users of a bicycle and want a bicycle stand which is both cheap and easy to construct, will find the one described here very efficient. Particularly, as unlike many other bicycle stands of this nature, the bicycle can be simply wheeled into position without necessitating any further complicated action. The wheel falls into place, thus keeping the bicycle in a vertical position until next required.

This bicycle stand was made for a machine having 26in. wheel, steel rim fitted with $1\frac{3}{8}$ in. tyres, but as will be seen, it is a very simple matter to modify for any other size wheel.



Oak was used in making the wheel-base, B, and wheel supports, A and A1, as much strength as possible being required here, while the remaining portions were of deal. Now as to working details: first take a piece of oak 20ins. by 2ins. by 2ins., at centre 10ins. from either end, cut a slot 9 1/2ins. long, 1 1/2ins. wide, and 1 1/8ins. deep at centre, to suit radius of tyre.

This slot can best be made by drilling holes with a brace and 1 1/4in. bit, truing up to final size with a good sharp chisel. Directly beneath this slot another groove is cut marked off evenly each side of the centre line, 4ins. long and 1/4in. deep to fit the base, C.

Now from one end at a distance of 4 1/2ins. a 7/16in. hole is drilled and two further grooves are cut 2ins. wide, 5/16in. deep at an angle of 120°.

Wheel Supports

The two wheel supports, A and A1 should be a good fit here and are held firmly by a 3/8in. nut, bolt and washer. The other end of this piece of wood is bevelled off from the edge of the 9 1/2in. slot to make an easy run up for the wheel.

The two wheel supports, A and A1, are similarly

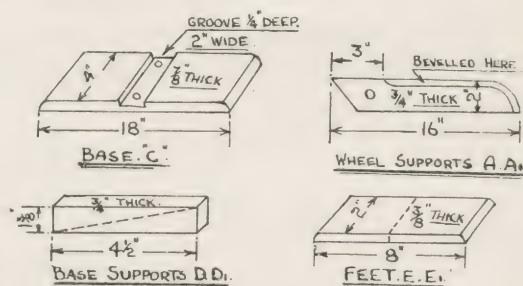
made of oak 16ins. long, 2ins. wide and 3/4in. thick, bevelled as shown in drawing, 3ins. from bottom, this is to centre the wheel as it comes into position to be held upright by these two arms.

As stated before these two arms are bolted to the wheelbase, B, and held together at the top, 1 1/2ins. apart by the steel tie-plate 3ins. by 2ins. by 1/8in. screwed with ordinary round-head wood screws. The bottom end of these arms are cut off and trued up flush with the bottom of the wheel-base.

The Base

The base, C, is an ordinary piece of deal planed up to the required size 18ins. by 4ins. by 3/4in. At the centre a groove is cut 2ins. by 1/4in. deep. This fits into the similar groove under the wheel-base, B, and is secured in position by three wood screws, two being screwed through the base into the wheel-base, B, and one at centre through wheel-base into base, C.

The two base angle supports, D and D1, are made



from a piece of deal 4 1/2ins. by 1 1/2ins. by 3/4in. cut as indicated by dotted lines and held by 2 screws through base, C, and a small nail driven in from the top inside of slot of wheel-base, B, afterwards the head being filed smooth so as not to rub the tyre.

Two Feet

The two feet, E and E1, are made from a piece of deal 8ins. by 2 1/8ins. by 3/8in. bevelled to 2ins. on top to suit 2in. wheel-base, cut at centre as shown by dotted line and nailed at each end of wheel-base, B. The nail heads are driven in so that the feet can be trued up with a plane as necessary, to ensure the bicycle-stand resting evenly on the floor. It is advisable to drill a small hole at the bottom of the slot into which the wheel rests on the wheel base, as water is inclined to collect here, draining from the tyre when the bicycle has been out on a wet day.

The stand can be finished with a coat of paint, or to any other individual taste.

HINTS ON PLAYING TENNIS

ALL of you will have watched good tennis games at one time or another and, perhaps, will have been struck especially by the apparent ease and simplicity of the strokes. If you would discover the secret of this watch a good singles game, and concentrate on one player only—not on the ball nor on both players.

By watching his feet you will soon realise that a first class player is using his brain as well as his body—he is using it to save his body. Watch his feet while his opponent is returning the ball. He is not waiting for that return shot to be made before he moves. He is anticipating it, and moving to where he knows the ball will be returned.

You will ask how he can know where his opponent will place the ball, and in that question you have hit upon the secret of first class tennis.

One can look upon good tennis as a game of cat and mouse. Each stroke of the cat's is a definite manœuvring of the mouse out of position. When the cat judges this has been done successfully he springs. You realise therefore that a point is not won or lost in one stroke.

The Forehand Drive

The game is a battle in which each player strives to take the offensive first and, having taken it, tries to follow it up successfully. That is try not to make a winning shot too soon, nor to leave too late. But you must be certain that when the opportunity of making a winning shot comes you can rely upon your stroke. To help you in this here are tips to forehand and backhand driving.

The most satisfactory grip is that used by F. J. Perry and known as the "Continental" grip.

Look at the first two photographs and you will see that the racket is held edge on. Grip your racket and put your arm straight out in front of you. If you are gripping correctly there will be a straight line from the tip of the racket along the frame, up between the thumb and finger, along the arm to the shoulder.

Stance

Present your left side to the net. Make your left shoulder give the direction in which you mean to send the ball. Have your feet apart, and when you actually make your stroke be steady on both feet.

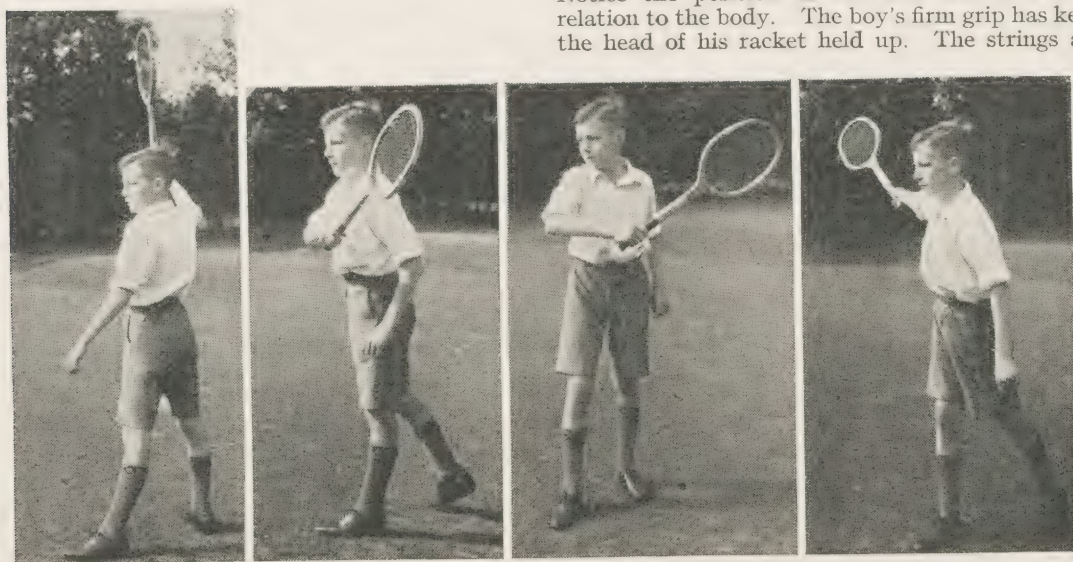
Make your preparatory swing while the ball is travelling over the net towards you. To do this lift your racket forward and upward over your head as in photograph 1. Get the lift from your shoulder and, by not letting your wrist bend. Be sure of keeping the head of your racket up.

This preparatory swing is useful in that it tends to make the stroke rhythmical instead of jerky, and lends more power to the shot than would a stroke made from the elbow. During this swing you are standing well back from where you anticipate the ball to bounce and your weight is equally balanced on both feet.

Your arm continues a circular movement backwards and downwards, up past your right side, and you hit the ball level with your waist, or a little higher. Reach well forward to the ball carrying your weight onto the forward foot.

The Follow Through

Instead of completing the circular movement of your arm up again over your head, bring the racket across your body as in photograph 2. Notice the position of the arm and racket in relation to the body. The boy's firm grip has kept the head of his racket held up. The strings are



square to his shoulder. The follow through is an important part of the stroke.

It adds speed to the ball and tends to keep it low, i.e. from going out of court. Using the continental grip, and this method of following through, tends to give the ball a certain amount of spin.

Footwork and Balance

When actually hitting the ball have both feet in contact with the ground. The time to move about the court is when your opponent is making his stroke, not when you are just about to make yours.

You can learn to judge where his return will be placed by noting his position on the court when he makes his stroke. Watch his leading shoulder and the direction in which his racket follows through at the end of his stroke. You may find as a general rule that a ball sent across the court will be sent back across, and that a ball sent down the tramlines will come back in the same half of the court.

Having both feet on the ground when you hit will ensure steady balance. As you hit carry your weight from both feet onto the forward foot.

Get used to using small steps when moving backwards or forwards. When moving only a little way across the court keep on the ball of your foot, and use a slipping step sideways.

Practise against a wall. The ball will come back quickly and so make you speed up your foot work. Remember, that apart from playing games, tennis strokes require a good deal of practise.

This is a stroke which often seems to present difficulties. These arise generally because the average player thinks of tennis strokes in terms of racket and arm instead of considering the importance of footwork.

Again, as for a forehand drive, anticipate the return shot and place yourself ready for it. Here are the necessary tips for a backhand drive.

The Grip

Look at photographs 3 and 4 and note the racket is grasped as for a forehand drive, but with the knuckles brought slightly more round. You will see that the head of the racket is held higher than the handle, and you know that this indicates a strong grip. Look at photograph 4 and note the position of the boy's thumb along the handle. This position will help you if you have a weak wrist or a heavy racket.

Step well across with your right foot so that your entire right side is to the net. Have your right shoulder pointing in the direction in which you mean to send the ball. Have your feet apart with your weight carried evenly on both feet.

For the preparatory swing simply carry your racket across your body as in photograph 3.

Carry your racket forward to meet the ball, keeping the head at a higher level than the handle. Lean well forward and meet the ball with a straight, but not stiff, arm. After hitting, let your arm continue the swing right out to the side as far as you like, see photograph 4.

Balance

Have both feet in contact with the ground when you hit the ball. Carry your weight from both feet to the front foot.

Keep well back from where you judge the ball will bound and begin your stroke a little sooner than you feel at first is necessary.

If a ball bounds low bend your knees to take it instead of dipping your racket. Always try to place your shot.

Joke Lung Tester—(Continued from page 201)

The head and mouthpiece fittings are made from two cotton reels or wire (S.W.G.) spools. The latter, if you can obtain them, are the most suitable to use in respect to the measurements given at Fig. 3. With the reels, you may not be able to cut a $\frac{3}{8}$ in. shank as depicted owing to the diameter of the bobbin-pin hole.

To proceed with the spools, at least, remove one flange, then divide the "stem" and saw a shoulder neatly around it, the waste being removed with a penknife or rasp. You will require two made identical, and having got them made, insert one to the upright cap and—if found necessary—apply a smearing of tube glue.

Insert the tubing through the upright hole and over the stem projection of the head spool, the mouth-piece going to the other end. The hole in same should be widened with a countersink bit, but this is not highly essential; do not interfere with the head spool hole in any way.

Should the tubing be $\frac{1}{2}$ in. in diameter, and consequently, somewhat loose over the stems, a piece of galvanized wire or twine tied tightly around will prevent any escape of air.

This completes the "apparatus" and as a finish the wood could be varnished or enamelled. When polished ebony black, with Hobbies Lighting Polish, there is a "professional touch" about the article and victims are not so apt to treat the whole with a critical, if not a caustic eye. It would help matters (or should we say, the delusion?) better if the head and mouth-piece were enamelled bright red or green.

In conclusion, let the victims place the square of card on the head spool themselves, otherwise they might, after a breathless struggle, think you had stuck the pin point into some part of the spool. We should add, too, that one should look no further for victims than in one's own family or make use of intimate friends who possess a good pair of healthy lungs.

MATERIAL LIST

1 piece wood ...	4ins. by 4ins. by $\frac{1}{2}$ in. thick.
1 piece wood ...	4ins. by 3ins. by $\frac{1}{2}$ in. thick.
1 piece wood ...	3ins. by 2 $\frac{1}{2}$ ins. by $\frac{1}{2}$ in. thick.
2 cotton reels.	
1 piece rubber tubing ...	12ins. by $\frac{3}{8}$ in. in diam.

MAKING AN AQUARIUM IN CONCRETE

HAVE you ever felt a twinge of pity, or even of shame, on seeing that most beautiful of all aquatic creatures, the goldfish, vainly pushing its nose up against the glass walls of a globular prison which may measure in diameter only three or four times its own length?

Or if goldfish do not attract you, do you never wish you could watch more closely the darting minnow, the ferocious water scorpion, the shy water-boatman and the clumsy water beetle; follow the fascinating life cycle of the dragon-fly, or tempt the resourceful caddis grub with all manner of building materials for the home he builds round himself?

For this, a large aquarium is quite essential. In a small tank it is impossible to grow sufficient aquatic weed for both food and aeration, and all but the smallest creatures maintain for a short while a cramped and miserable existence, and eventually die.

The cost of such large tanks is generally prohibitive, and home-made ones often prove failures, owing to the difficulty of preventing leakage, whether frames of lead or angle-iron are used. A satisfactory alternative is to embed sides of thick glass in slabs of concrete and a general idea of the method of construction will be obtained from the diagram. Size is limited only by the dimensions of the available glass; construction is quite simple and free from snags of any kind; and the cost will be reasonable, especially if you can pick up the glass at 'scrap' price.

The Glass

Do not be tempted to use thin window or horticultural glass. Plate glass, three-sixteenths to a quarter of an inch thick, is necessary. A furniture dealer can often supply, at a fraction of the cost of new glass, an old mirror which scratches or other minor flaws have rendered unsaleable.

A 3ft. by 2ft. mirror will cut into a pair of quite useful strips. And here another word of warning. Do not attempt to cut it yourself, with a cheap wheel cutter. This is undoubtedly a job for the glazier.

A large pail full of fresh cement, free from any lumps whatever, should be sufficient for a three foot tank. Three similar pails full of clean sharp sand will give about the right mixture. A slightly higher proportion of sand would give blocks which, although mechanically sound, might prove rather too porous for our purpose.

Four iron rods will be required, to bolt the ends on to the base and sides. They should measure roughly $\frac{1}{2}$ in. in diameter, and will need to be 3 ins. longer than the glass. They should be threaded for a distance of 1 in. at each end and fitted with nuts.

Instead of washers, small plates about $1\frac{1}{2}$ ins.

square are recommended. A quantity of iron wire of fairly heavy gauge will be required, to be used as reinforcement for the concrete slabs.

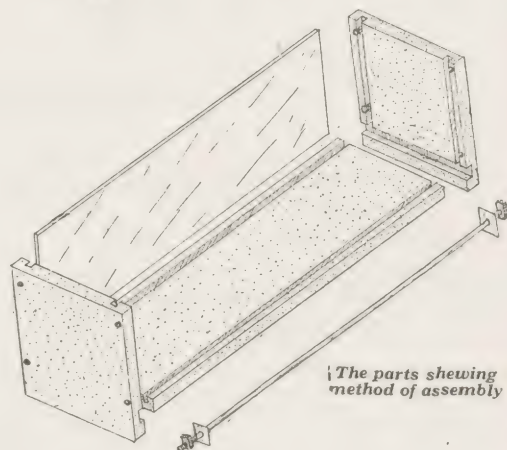
Construction

Construction of the frames in which the slabs are cast should be clear from the diagram. As regards dimensions, lengths will vary according to individual requirements, but the following sizes will prove a useful guide:—

Outside frames (A) should be of $\frac{1}{2}$ in. by $1\frac{1}{2}$ in. material.

For grooves (B) pieces $\frac{3}{4}$ in. deep by $1\frac{1}{2}$ in. wide are required.

For grooves (C) pieces $\frac{3}{4}$ in. deep by $\frac{1}{2}$ in. wide are required.



The formwork should be assembled and fastened down lightly to a solid wooden base, which will not warp appreciably when wet.

All frames must be accurately square, and the spacing of the grooving strips (C) must be such that they will register accurately when the slabs are assembled. A space of about 1 in. should be left between (C) and (A) in all cases.

Each end slab will require four holes through which the iron rods will pass. For these, short lengths of dowel rod of about $\frac{1}{2}$ in. diameter will be needed. Drive a 1 in. nail vertically into one end of each, cut off the head, and file to a point. Each may then be fixed in position, touching (C).

Concrete Mixing

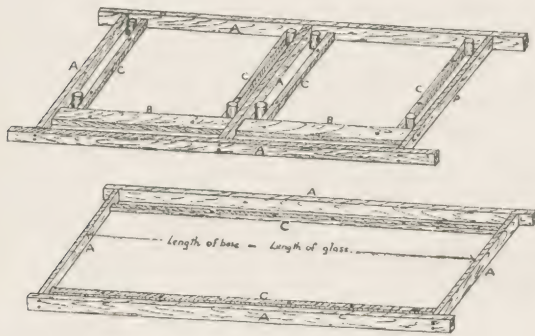
Those not familiar with this type of work are recommended to obtain the free leaflets issued by the Cement and Concrete Association, at 52, Grosvenor Gardens, S.W.1.

However, the following brief instructions should ensure a satisfactory result. Mix thoroughly the dry sand and cement until the mixture is of one

uniform colour throughout. Take the quantity required for immediate use, spread it out on a board or other smooth, clean surface, sprinkle with water and mix well. Continue to add water with constant mixing, until, on standing for a few moments, water just begins to drain out of the mixture. Too dry a mixture will result in cracking.

First cover all pieces (B) and (C) with strips of wet newspaper, to facilitate their removal when the concrete is set. Now transfer to the frame sufficient mixture to fill it to about half its depth, packing it carefully into all corners, using the end of a thin strip of wood. Then lay on the reinforcing wires, arranging them at intervals of about 3 ins., both endwise and crosswise.

They should stretch almost the entire length and breadth of each slab in order to protect the corners



The frames for the ends and base

from possible damage. The frame may now be filled, all corners again well packed, and the surface levelled by sliding a length of wood to and fro along the top of the frame.

Shield well from wind and sun, and sprinkle with water from time to time to avoid cracking.

It should be quite safe to lift off the slabs in three or four days, but patience is advisable at this stage. When caution finally yields to curiosity, remove the outer parts of the frame, carefully insert a spade under the slab and gently ease it away from the rest of the frame.

Drying Off

The slabs should now stand on end in a dry place for two or three weeks to dry off. Before assembly it is well to scrub down the inner surfaces, or even soak them in water, to remove

poisonous products which are always present in new concrete.

Here it is advisable to secure the services of two assistants. First see that all grooves register correctly, and accommodate their respective parts with plenty of room to spare. Take the slab which is to form the base of the aquarium and raise it by means of blocks of wood to a height of about two inches from the ground. Place all other parts conveniently to hand. Prepare a small quantity of 2:1 fine sand and cement, mixed rather wetter than usual, and fill the two long grooves with this mixture.

The Glass Sides

Place each glass side in position, sliding it to and fro along the groove until it has bedded down well to the bottom and has squeezed out all surplus concrete. Next fill all grooves in the two end pieces and lift them into position. Insert the rods and tighten the nuts until all parts have properly entered their grooves.

Here we see the importance of making the grooves fully $\frac{1}{4}$ in. wider than appears necessary. This guards against any strain to the glass, in case the grooves do not register perfectly and also allows surplus concrete to squeeze out freely as the grooves are entered. All joints should now be packed well with a trowel, and finished off with a bevel of concrete in the same way that putty is used in window glazing.

It now remains only to fill up the bar holes with concrete, and this may quite safely be done at once, provided that only one bar at a time is removed.

Allow to Harden

Once again it should be shielded from wind and sun, and sprinkled with water occasionally for a few days.

It is not advisable to fill it with water until it has stood for a further two or three weeks. It may then be given a good soaking in two or three changes of water, after which it should be quite safe to introduce living specimens.

At some later date, a coat of green paint may be applied to the exterior. Earlier application only results in discolouration of the paint.

And one last hint. This is necessarily a long job, and the longer you spend on it, within reason, the more sound will be the result. Besides, a good bargain in mirrors is well worth looking around for.

CORONATION MEDAL STAND COMPETITION

DID you cut out your Medal Stand from our issue of May 1st? Of course you did. Now we can tell you what to do with it to win a prize. Send it in to the Editor, Hobbies Weekly, Dereham, Norfolk for judging, and valuable prizes will be awarded the best made. If you want the Stand back enclose 6d. for the return postage.

Don't forget to put your name and address, with age if under 16. First prize will be a Guinea Swan Fountain Pen and a Solid Silver Coronation Medal. Other prizes will be added according to number and merit. Entries must be received by June 12th. Back copies of the design obtainable 3d., post free.



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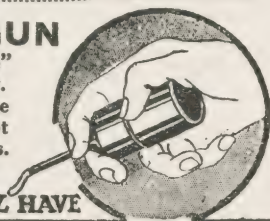
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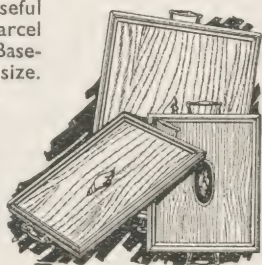
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YOU HAVE BEEN WARNED BY RADIO

Professor Hilton, on November 19th, 1936, from the B.B.C., broadcast a warning. The warning was to the effect that while there are many really good and reliable Colleges teaching by correspondence, there are many others which are colleges by name only. He said some so-called colleges rented a couple of rooms in a large building in a well-known street. Some made great promises which they did not intend to fulfil. Some claimed successes they could not prove. In some cases the names of prominent men were quoted who were in no way connected with the working of the College.

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The big name of a college is no proof of its national standing. The Bennett College has been established over 30 years and our entire building is devoted to Bennett College work. No other business of any kind is either on or attached to the Bennett College. We have seating accommodation for over 10,000. We have a permanent staff of over 190 people on the College premises. Our Professional Staff have all passed their examinations, and our tutors are all experts in their own specialised work. We do not send out any homework to be corrected by tired spare-time tutors. All students' homework is corrected on the College premises the same day that it arrives, and is returned by evening post. This College is Technical, Scientific, General and Commercial, thus enabling us to cater for all requirements; this is important to Cost and Works Accountants, and all who have to deal with rate-fixing machining-allowance, and it is also of great importance in many of the Civil Service Examinations. This is an entirely British College. Most of our textbooks are written on the College premises by our own professional staff, especially for tutorial purposes. Our tutors specialise in teaching students for the examinations they themselves have already passed.

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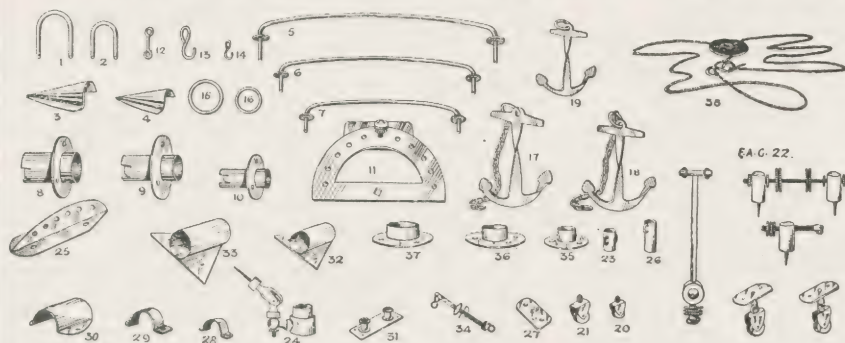
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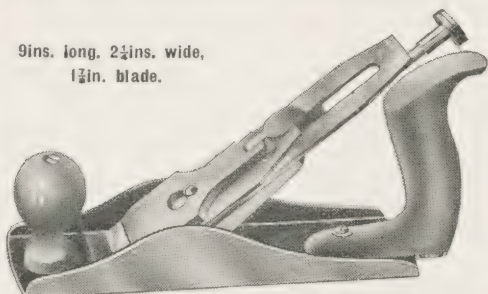
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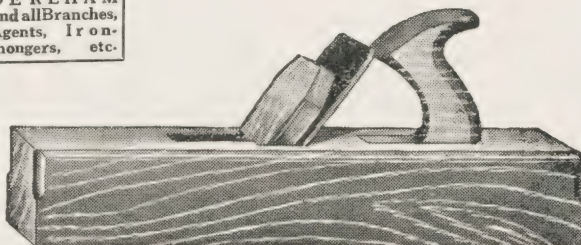
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A MODERN HALL MIRROR

THE hat and coat rack shown in Fig. 1 is very suitable for a small hall and is designed on modern lines. The length of the fitment is 2ft. 9 $\frac{1}{2}$ ins. and its height 1ft. 8ins. Two shaped brackets are arranged on the lower rail and to these is attached a shelf, useful for holding a clothes brush or gloves.

The whole piece is designed to take Hobbies special mirror (No. 5745) measuring 14 $\frac{1}{4}$ ins. by 11 $\frac{1}{4}$ ins. and priced at 6/9. There is space on the upright rails for four hat and coat hooks (No. 6160) also from Hobbies.

The construction of the frame is shown in Fig. 2, A being a back view and B a front view. The two outside upright rails "run through" on the face of the frame showing the two joints vertical as at B, Fig. 2. The two middle rail joints are horizontal.

The rails are all put together with the half-cut-through or lap joint illustrated in Fig. 3. Wood $\frac{5}{8}$ in. thick is used for all six rails. The four outer ones are 2 $\frac{1}{2}$ ins. and the two middle rails 2ins.

Preparing the Rails

In preparing the rails, cut off two 2ft. 8 $\frac{1}{2}$ ins. long and two 1ft. 7 $\frac{1}{4}$ ins. for the frame. Set in the widths of the halvings at all ends and cut them in accurately. Now find the centre of the long rails and set off 5 $\frac{5}{8}$ ins. each way to give the width of the mirror.

Mark the four halvings for the mid rails making each 2ins. wide. Set them in from the back of the frame (A, Fig. 2). Check all the joints and the actual space for the mirror. Glue and screw all

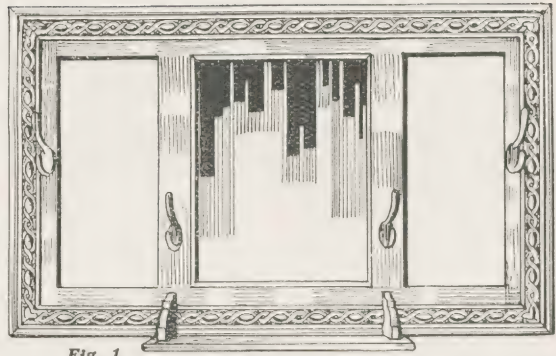


Fig. 1

the halvings, and plane up and trim off any superfluous wood at the junctions of the rails.

The edges of the frame are finished around with strips of wood 1in. by $\frac{3}{4}$ in. in section one narrow edge being slightly rounded off (Fig. 5). Measure off the strips carefully and allow for mitring each end. The pieces are mitred and screwed to the framing with $\frac{3}{4}$ in. countersunk screws.

Next form a rebate for the mirror in the central opening by nailing round four strips of $\frac{3}{4}$ in. by $\frac{1}{4}$ in. strips (Fig. 5). The corners must be neatly mitred.

Brackets

Two simple brackets are now cut from $\frac{5}{8}$ in. stuff to the outline in $\frac{3}{4}$ in. squares shown in Fig. 5, the sizes being 3ins. by 2 $\frac{1}{2}$ ins. Cut this out with the fretsaw and use it as a template for marking the second bracket.

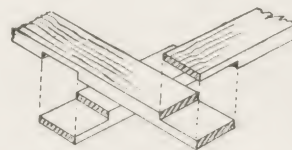


Fig. 3—The joint used

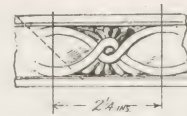


Fig. 4—Cut the moulding in sections as shown

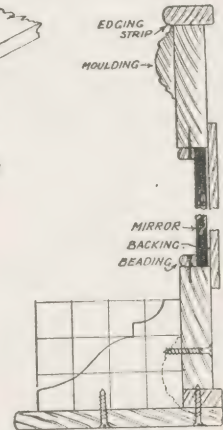


Fig. 5—A section showing various parts

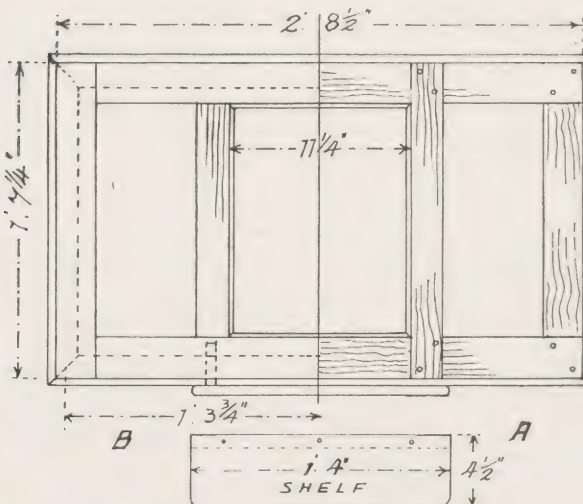


Fig. 2—Flat front view with dimensions

MATERIALS REQUIRED

- 2 pieces, 2ft. 9ins. long by 2 $\frac{1}{2}$ ins. by $\frac{1}{2}$ in.
- 2 pieces, 1ft. 8ins. long by 2 $\frac{1}{2}$ ins. by $\frac{1}{2}$ in.
- 2 pieces, 1ft. 8ins. long by 2ins. by $\frac{1}{2}$ in.
- 1 piece, 5ins. long by 2 $\frac{1}{2}$ ins. by $\frac{1}{2}$ in.
- 1 piece, 1ft. 4ins. long by 5ins. by $\frac{1}{2}$ in.
- 2 pieces, 2ft. 10ins. long by 1in. by $\frac{1}{2}$ in.
- 2 pieces, 1ft. 9ins. long by 1in. by $\frac{1}{2}$ in.
- 2 pieces, 1ft. 3ins. long by $\frac{1}{2}$ in. by $\frac{1}{2}$ in.
- 2 pieces, 1ft. 0ins. long by $\frac{1}{2}$ in. by $\frac{1}{2}$ in.
- 1 piece 3/16in. plywood, 16ins. by 13ins.
- 1 mirror No. 5745.
- 4 hat and coat hooks No. 6160
- and 2 hinges No. 6134.

The brackets are set centrally with the middle rails, and to them flush on the long rail, little notches must be cut away from the edging strip for them to fit in.

A plain shelf (Fig. 2) is cut from $\frac{3}{8}$ in. wood and screwed to the edging strip and the rail (Fig. 5).

The decorative effect of the frame is gained by the moulding (No. 137) sold by Hobbies for 2d. per foot. The measurement, 1ft. $3\frac{3}{4}$ ins., gives just

the length for cutting off and mitring to one "egg" section (Fig. 4). It will be seen from this diagram that the repeat pattern is $2\frac{1}{4}$ ins. in length so all lengths should therefore be multiples of this.

The whole would look well stained and polished. The mirror is put in from the back of the frame and a cover board of plywood put over and screwed on.

GADGETS for the AVIARY

YOU can make all sorts of gadgets and fittings for your aviary and bird-cages from odds and ends of fretwood, wire, glass and similar scrap and add greatly to the comfort and happiness of your feathered pets. You will be able to gather the ideas from the sketches and many more appliances will suggest themselves once you get started on the job.

The nesting material or green-food rack is easily made by sawing two pieces of fretwood to shape and then, after drilling small holes, joining them securely together with short lengths of stiff wire; finally adding a couple of wire hooks in order to hang the rack to the cage side.

Pan and Perches

Your birds will appreciate a nesting pan made from the bottom of a coconut shell. Saw off the end to the required size and file the edges smooth. Then with the edge of the file run a groove right around the circumference for the wire hanger to bed into, if this is not done the wire may slip and your chances of hatching that lot of eggs be ruined. Drill two or three small holes in the bottom of the shell for ventilation and then twist a length of wire tightly around in the groove; shaping the ends into two hooks so that the nest may be suspended.

Spring-end perches are much more comfortable for the birds than the usual type. Take a length of wire, fairly stiff, and wind it two or three times tightly around the perch end. Bring the wire end out underneath the perch and bend it to shape as

shown, finally bending two or three turns to a T-shape so that this may be slipped between the wires of the cage to hold the perch in place.

Talking about perches, do make sure that all yours are of the oval section shown in the drawing. A bird can grasp this shape with comfort and safety, while with the round type his feet get cramped as he must grip very tightly to prevent himself from slipping around.

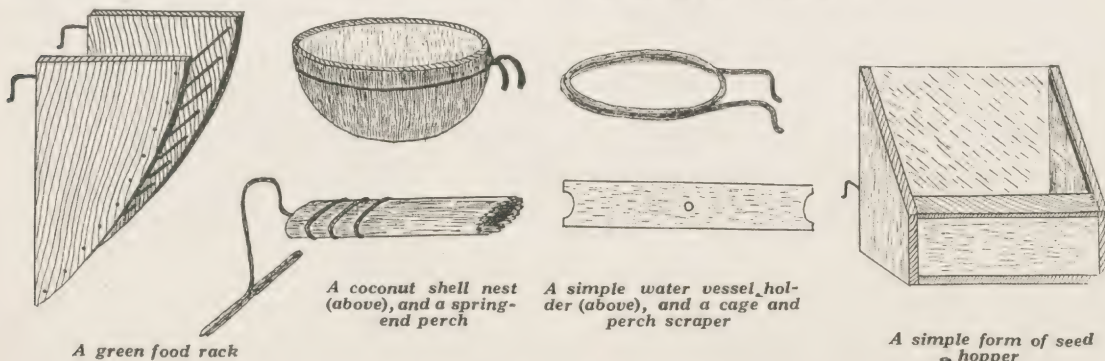
You can easily make a holder for a water vessel of any size or shape by winding two turns of wire around it and then taking the ends out to bend them into small hooks for fixing the holder to the cage.

The seed hopper shown is easily made from a few pieces of odd fretwood and a piece of glass cut to size. The sketch explains itself and you will see that with a glass top to the hopper, the bird can really see what kind of seed it is picking up.

A Scraper

A scraper of the kind shown may be shaped from a piece of saw blade, an old table knife or any similar strip of steel. File the grooves shown in the ends; these are for scraping the perches and drill a hole in the centre so that a handle may be secured to the blade.

If the piece of steel is very hard you may find some difficulty in drilling it. Let a gas or spirit flame play on it until it is red, then when cool, it will be much softer and the drill will slip through with much more ease. File the edges of the scraper sharp, fit a suitable handle and your cage cleaning will lose a great deal of its labour.





USING THE PROPER GRADE OF FRETSAWS

WE are frequently receiving letters from readers with regard to the various grades of fretsaws which should be used on certain classes of work, and possibly these few notes on the subject may be helpful to beginners or those who have not previously paid much attention to this point. Actually it is a matter worth thought, because obviously if you are using the wrong brand of fretsaw for the particular work in hand, then you are not getting the best out of it.

For instance, if you are doing a piece of rough cutting on, say, $\frac{1}{2}$ in. deal for something which does not really matter very much, and you are using a very fine fretsaw, obviously you are wasting a good quality blade and having to use up considerably more energy in doing it than you need.

It is a failing of many workers simply to order a fretsaw blade and leave it to Hobbies Ltd. as to what to send. Obviously then they receive the medium grade, which is the most useful for a general range of work.

A Useful Holder

At the same time, it must be remembered that even these mediums are not exactly suitable for very fine cutting, and obviously involve unnecessary labour if used on heavy work. Remember, therefore, that it is well worth while getting a fretsaw blade according to the work you have in hand, and for this reason a good plan is to have a little box partitioned off and have the various

grades of blades kept in it with the number or size pasted in figures or pencil somewhere conspicuously opposite the compartment.

Nor is it worth using a cheap unknown fretsaw blade because although you may get more for your money, they are usually made of inferior quality steel and not tested and tempered the same as Hobbies blades are.

The latter are put through half a dozen different processes which have been found the best during the course of 40 years' experience, and obviously anyone who specialises in this for so long, should know something about it!

Sizes and Kinds

Generally speaking, blades are cut from a special quality of steel which, after it has been suitably treated, will stand up to work and normal usage for a considerable time. We often hear from readers who have executed quite a number of designs from one blade.

This may seem extraordinary to the beginner who is perhaps unduly heavy in breakages, but with a little practice and care and attention, a single Hobbies blade can be made to last quite a time in undertaking a large amount of work.

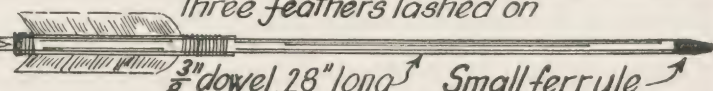
The most popular blade is the Yellow Label, so called because every dozen and gross are distinctively banded with a yellow band. There is thus no question of not knowing that they are Hobbies when you buy them. This Yellow Label saw is obtainable in sizes ranging from 00 to 6, passing in this way, 00, 0, 1, 2, 3, 4, 5, 6.

Thus you have a range of eight varieties of blade to choose from, and although it is not necessary to

SUMMER CRAFTS

A Real Bow and Arrows


Yew or ash, 5' long
Tapered each end. Oval section. (Hand grip)
6"
Strong fishing line

Nock → 
3/8" dowel, 28" long
Small ferrule

Three feathers lashed on

(Leather thong) *Top & bottom "nocks" are carved from bone, & dowed in tightly.*
Make paper target, 48" dia., & pin on a sock of straw. Be very careful where you shoot

White, scores 1
Black " 3
Blue " 5
Red " 7
Gold " 9
(Bullseye is 4ft from ground)



keep them all, at least three or four should be at hand for usage on the appropriate work.

The Finest Blade

The OO is a very fine blade which should be used only on the finest work. It is—being Hobbies—exceedingly sharp, and can be turned in the finest corner, its width of blade being very little greater than its thickness. This is also useful for cutting composition which has an intricate or finely shaped design—for ivory, ivorine, bakelite, etc., of thin sheets.

Gradually the saws get wider as the numbers go upwards, and 2 and 3 are suitable for general work of a medium character. Of course, 5 and 6 have gone to the other extreme, and are quite wide and comparatively coarse blades which are very useful for cutting rough outlines or toys which will be rounded off or shaped, or cleaned away.

All Hobbies saws, of course, cut with a clean edge, but the coarser ones are bound to pull a little more through the wood and leave a fray on the underside which must be glasspapered off later.

Three Useful Sizes

The beginner can well have three grades of saws—No. 0, No. 2, and No. 5, and with these always at hand he will be able to undertake almost any of the work he is likely to come across in the ordinary course of events. Of course, if he is working on very hard material such as slate or tight composition, then his progress through such material will naturally be slower.

It is unfortunately one of the great causes of breakage that the worker tries to force his blade too fast through the wood. By this we do not

mean that the up and down stroke goes too fast, but that he presses it into the wood too hard.

Obviously the blade can only cut at a certain rate, and the quicker it goes up and down, the quicker it can make its way through the material. At the same time, it is useless pressing the blade on to the work so it bows out and ultimately breaks.

A Heavy Toy Saw

In addition to the ordinary fretsaw blades, there is a special one made for the heavy worker who undertakes toys and models in which ordinary deal or soft wood is used up to about 1 in. thick. These heavy fretsaws, as they are called, have a blade over 1/16 in. wide and are made of special heavy steel to stand up to hard and laborious work. They are particularly useful, of course, in electric driven machines of the Anchor type, but are also helpful to workers undertaking a large amount of thick wood cutting.

For Cutting Metal

Or again, if you are cutting out anything in metal, you should obtain Metal Cutting saws. These have very fine teeth set quite close which bite their way through the metal at a reasonable rate. Obviously the cutting here is not so fast as it is through wood, and one cannot get along very quickly.

At the same time, the teeth cut accurately and go through almost any normal metal (such as sheet silver, zinc, brass, etc.) to a fine line much the same as work is cut out in wood.

Remember, therefore, next time you are ordering fretsaws, to think of the job for which they are required, and to order accordingly.

HOBBIES LEAGUE CORRESPONDENCE CLUB

These Members of Hobbies League would like to get in touch with other readers and so form pen friendships which will undoubtedly prove interesting to all. In this way, one has a wide circle of friends and increased knowledge in people and places, not only in one's own country, but all over the world. Members should write direct to the addresses given, stating their full address and age, adding any hobbies in which they are interested. Hundreds of members have already taken advantage of this Correspondence Club in this way and others who wish to do so should notify the Registrar with the necessary particulars.

NAME	ADDRESS	WANTS FRIENDS	INTERESTS, Etc.
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B. G. Reddy.	P.O. Cavendish, Natal, S. Africa.	Anywhere.	Electricity, Fretwork and Model making.
J. G. Capon.	"The Mount," Kersey, Nr. Hadleigh, Suffolk.	English in Canada age 15 years.	Stamp Collecting.
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C. O. Aneme Nwankwo.	The Government School, Ajalli, Awka Dist., Onitsha Province, Nigeria, W. Africa.	Anywhere.	Anything.
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R. Roland.	6 Hewson St., Carlisle.	Anywhere abroad.	Stamp collecting.

OUR MONTHLY CALENDAR PANEL

READERS will have followed with interest, the various months which we have depicted in the little panel since January. Now we come to the month of roses—June—and give the appropriate cut-out panel to fix to the calendar which they no doubt have already made. The finished article is illustrated herewith, and as explained before, it is cut from a plain board with rounded corners, and fitted with a hole or fancy string at the top for hanging.

The main board is $\frac{1}{4}$ in. thick but the overlay of "June" can be $\frac{1}{8}$ in. or $\frac{1}{16}$ in. Cut out carefully to show up clearly the motif of the rays of the sun and the rose, then if you wish, paint this black or some other colour and screw in position as shown, the wording of "June" should be cut out in paper and pasted on a strip of wood glued just below.

Then, when next month's comes you will be able to cut that out and paste it over again.

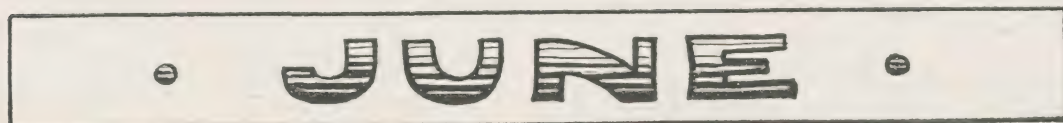
Below the pictorial representation is the piece torn from the Hobbies Calendar No. 6154 for the appropriate month.

Although, of course, the backboard shown is a plain rectangle, there is no reason why one of quite a different shape should not be used. It

can be cut to the outline of some of our ordinary designs or the artistic worker can shape up his own.

Another method is to omit the background altogether, and to cut out the panel to make it stand up in a piece of grooved moulding after the fashion of the calendar cut-out blocks. In this case, of course, the picture must be cut from $\frac{1}{4}$ in. wood if $\frac{1}{8}$ in. grooved moulding is being used, or $\frac{3}{16}$ in. thick board is the larger size.

If the panel is cut out in this way, a good plan is to back it up with some of Hobbies coloured linen cloth or some of the Japanese veneer paper which would give it a striking background. The grooved moulding should be about 2 ins. longer than the actual panel, then a little piece of wood about $1\frac{1}{2}$ ins. square glued into the groove to take one of the smaller calendar date pads obtainable from Hobbies.



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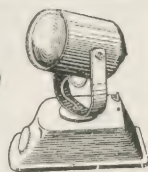
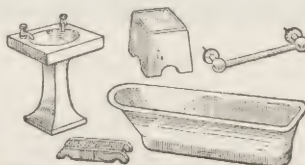
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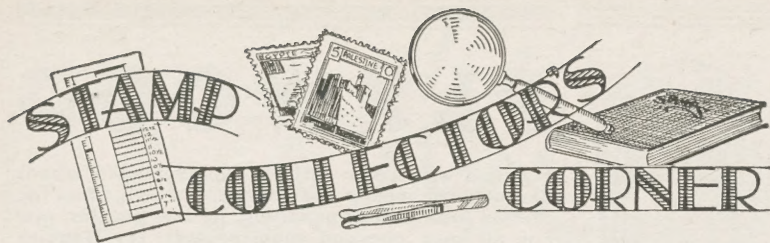
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HOW TO IDENTIFY STAMPS

WE were discussing in our previous article the question of placing stamps of Countries having Colonies.

Really this is a case which is not of very great importance. Provided you make one rule and stick to it all will be well, and of course it is better to follow the same course as the catalogue which you are using.

Remember, also, some countries have what are termed "standard colonial designs." These are designs which have been adopted by more than one colony of a particular power, the idea being that of economy. All that is done to produce the stamps for four or five regions is to print off the total number of stamps required leaving blank a space for the name of each colony. The total is then divided and the particular name of one colony is printed on the number required by that colony, and another name is printed on another lot and so on.

If you get to know these standard designs you will soon be able to pick out the various colonies very quickly, because the position of the name of the colony is always the same. The illustration of the stamp from Ceylon would if the name were changed, do for the Cayman Islands or British Honduras and so on.

Unfortunately this is also where the greatest difficulty comes in advising too, and the great thing is to study as many stamps as possible, and remember the characters which must help one to decide.

Suppose we make a short list of some of the countries which have their own lettering, and see if we can suggest methods of identifying the stamps from each country in turn. China, Corea, Japan, Turkey, Bulgaria, Russia, Serbia, Persia (Iran), Armenia, Georgia, Mongolia, Greece, Crete, etc.

China and Japan may be taken together because the trouble will be confusion between these two. Japanese stamps show what is called the chrysanthemum—that circle with many radii drawn—while the Chinese stamps do not have this. Corea has two types of lettering, one of which we are able to read perfectly easily.

Turkish stamps now have the name of the country shown in Western lettering as well as the Turkish characters. In the earlier issues however, this was absent, but then they had the familiar 'Tougra' as an identification mark. In Bulgaria, nearly every case the name of Bulgaria appears at the top of the stamp.

The best thing would be for a collector who does not quite know

lettering he knows that he has a Bulgarian stamp to place in his album. By having a few stamps correctly placed for comparison, a collector will very soon learn the points he needs.

Next comes Russia, and on all Soviet stamps you will find the letters C.C.C.P. which should make things fairly easy. Serbia is rather a difficult stamp to identify as the name in their own characters looks rather like 'CPENJA,' only the letter 'N', is as it were, turned round, so that the down stroke is from top right to bottom left instead of the reverse. The formation of the other letters is not exactly the same as ours, but the similarity is sufficient to enable one to recognise it. The lower values (paras) appear to be spelt 'NAPA,' though again the formation is not exact.

The earlier issues of Persia nearly all have 'Postes Persanes' on them, but now it is changed to 'Postes Iraniennes.' Azerbaijan Republic some assistance may be gained by finding the hammer and sickle in a crescent, although this is not found on every specimen.

The hammer and sickle may also be found on some of the earlier issues of Georgia, though in this case the crescent is not around them; unfortunately this is not by any means infallible, the only thing to be absolutely certain is to learn the language.

Greece is fairly well known, not because the majority of stamp collectors know Greek, but because the stamps are not by any means uncommon. So that we all have a very frequent reminder of the appearance of the Greek for Greece.

Readers will, after having read these notes, come to the conclusion that although there are certain things which are found on stamps which enable a student to identify a specimen, yet it is impossible to lay down a hard and fast rule as to what to look for on every stamp in order to make certain of correctly placing it. The chief factor, as with so many other things is perseverance.



An Austrian News-paper Stamp without a word



Note the "Ukraine Tridcut" in front of the man's face



his stamp is Greek to collectors

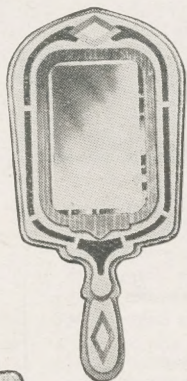
Probably the greatest difficulty is experienced by readers when they come across stamps which are printed, not only in a foreign language, but that particular language is in strange characters.

the Bulgarian stamps accurately to get a friend to show him one, then make a careful note of the characters which compose the name at the top of the stamp, so that when next he sees this

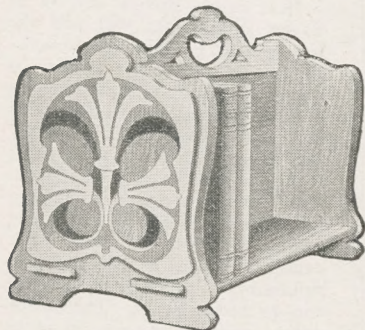
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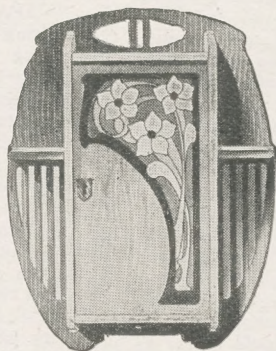
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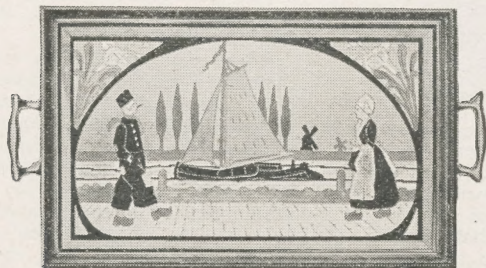


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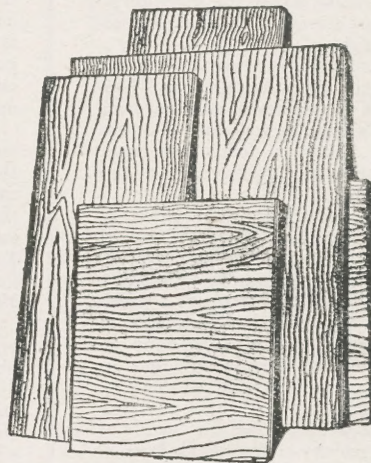
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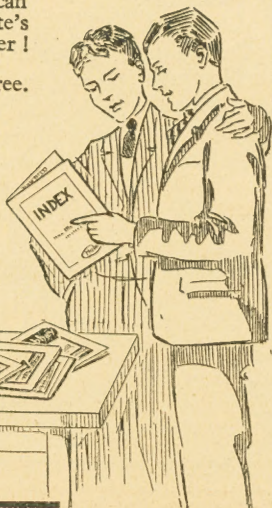
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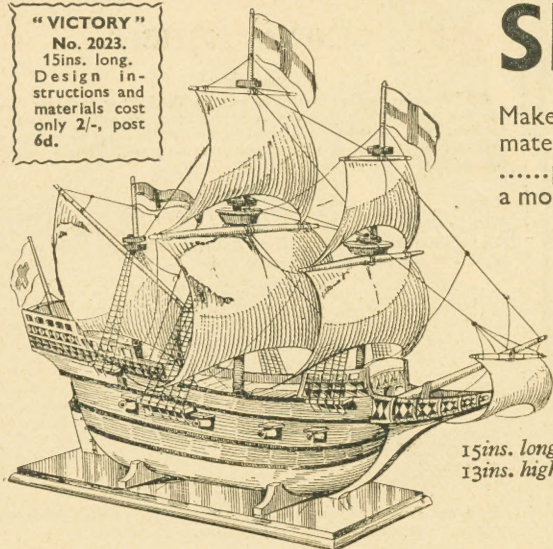
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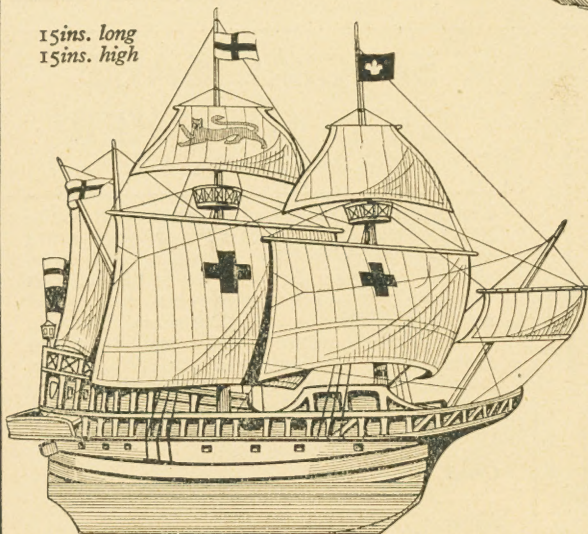


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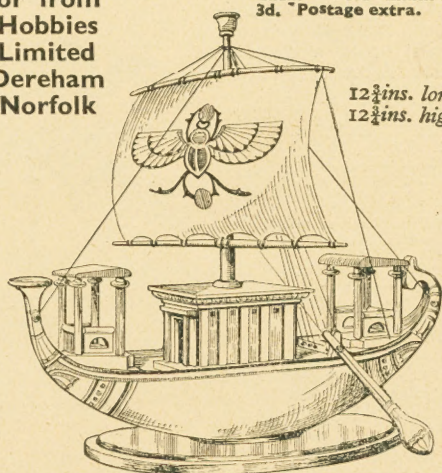


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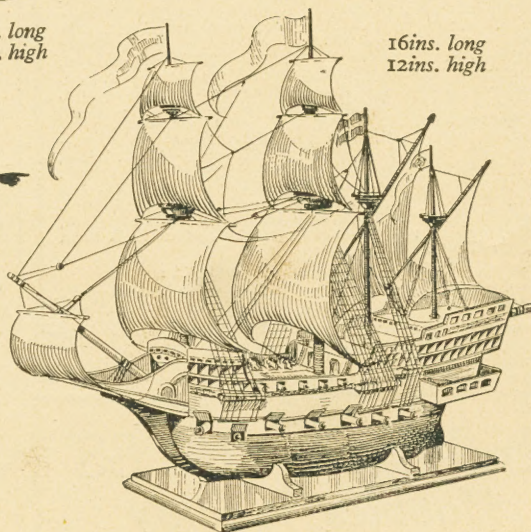
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